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## A REVISION OF THE GENUS *FURNARICOLA* (MALLOPHAGA) WITH DESCRIPTIONS OF NEW SPECIES

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The present paper has been prepared with much care for two reasons: The first and most urgent is to clarify the taxonomic position of the genus itself, which has been a controversial one since it was placed under the synonymy of *Rallicola* in the 1952 "Checklist of Mallophaga" by Hopkins and Clay. The second reason is to describe additional material which has been collected by the author since the genus was established in 1944 and also to record its occurrence on two other families of birds, from one of which no Mallophaga have previously been taken.

It will be noted that the bird hosts, with very few exceptions, have all been collected and prepared by the author himself, which has given him an unprecedented opportunity to verify the hosts in question and to check on any cases of suspected straggling.

All measurements are in millimeters and all drawings were prepared by the author with the greatest possible accuracy. Types, unless otherwise indicated, are in the author's collection.<sup>2</sup>

<sup>1</sup> Deceased July 27, 1965.

<sup>2</sup> Mr. Carriker bequeathed his entire collection of Mallophaga to the U.S. National Museum, where it is housed in the Department of Entomology.

The nomenclature of the bird hosts follows that of Peters' "Birds of the World."

**Genus *Furnaricola* Carriker, 1944**

*Furnaricola* Carriker, 1944, Bol. Ent. Venezolana, vol. 3, no. 2, p. 83.

Type species: *Furnaricola acutifrons* Carriker.

The genus was fully and accurately characterized in the original description and in that respect needs no further comment.

At the time the genus was established 8 species were placed in it, 5 from the Furnariidae, 2 from the Dendrocolaptidae, and 1 from the Formicariidae. Since then (in a paper published in 1963) the author has described 3 additional species from the Dendrocolaptidae. The hosts of the species from the Formicariidae, described in 1944, were under suspicion for some time, since I was under the impression that the genus might possibly be restricted to the Furnariidae and Dendrocolaptidae.

Later collecting has yielded numerous species of the genus, not only from the above-mentioned two families, but several more from the Formicariidae, and also, most unexpectedly, specimens were secured from two species of Pipridae (Manakins) and two from the genus *Scytalopus* (Rhynocryptidae), the latter being the first record of the taking of Mallophaga on this family of birds. Much care was taken in checking these host records, but there seems to be no reasonable doubt of their accuracy, especially those from *Scytalopus*.

A single female was taken on *Pipra pipra comata* (central Peru) and 1 female from *Pipra caeruleicapilla* (south Peru). They are typical of the genus but of a slightly distinct type, possessing certain special characters.

Two females were taken on *Scytalopus magellanicus affinis* (north Peru) and 2 females on *S. m. canus* (Colombia). The latter two also represent a slightly different type of insect. From the Formicariidae the following were secured: 2 pairs from *Myrmeciza immaculata*, 1 female from *M. laemostieta pallida*, and 1 female from *Pyriglena picea*. All are typical *Furnaricola* and prove conclusively that the genus is parasitic on at least five families of the Passeriformes and cannot possibly be congeneric with *Rallicola*.

In the present paper 4 species from the Dendrocolaptidae, 5 from the Furnariidae, 2 from the Formicariidae, 2 from the Pipridae, and 2 from the Rhynocryptidae are described as new to science. There is also another species now in press, from Venezuela, which will be noted on succeeding pages.

This is one of the controversial genera of Mallophaga, which, in the 1952 "Checklist of Mallophaga," was treated as a synonym of *Rallicola*.

Later Miss Clay published a paper in 1953 on "The *Rallicola*-complex" (Proc. Zool. Soc. London, vol. 123, pt. 3, pp. 563-587), in which it was maintained that *Furnaricola*, *Epipectus* Carriker, and *Corvicola* Carriker were synonyms of *Rallicola*. However, *Epipectus* is parasitic only on large woodpeckers (*Phloeocastes* and *Dryocopus*, especially the former), and *Corvicola* is from a species of Corvidae from Guam Island.

Her contention is based on the fact that the heads of all three genera are of a similar type, that the male genitalia are similar in all three, and that a pair of ventral spines is present on each side of the distal segment of the abdomen in the females with a fringe of short spines around the posterior margin of the last sternite.

The species of *Rallicola*, found on the family Rallidae, are a somewhat heterogenous lot, many of them with strongly dimorphic antennae and other outstanding variations; they range in size from very minute to quite large. *Furnaricola* has proven to be a very large, very homogenous group in which there is never any sexual dimorphism in the antennae; there are also certain differences between it and *Rallicola* in the abdominal structure and chaetotaxy.

The numerous known species of *Furnaricola* are all of a similar type, with variations in the shape of the head, size of body, and always in the male genitalia, but the females are sometimes so closely related that their separation, without the male, is often difficult. The only certain manner that I have discovered for separation of the females is by the chaetotaxy of the last abdominal segment.

I think that it would be most unwise to place this genus under the synonymy of *Rallicola*, since it would utterly confuse any idea of the relationships between the Mallophaga and their hosts.

### Key to Known Males of *Furnaricola* Based Largely on Genitalia

- A. Paramera bifurcated on inner margin.
  - a. Bifurecations long and slender, extending backward almost to base.
    - b. Head large, with wider frons (.43×.39; frons .108) . . . *heterocephala*
    - bb. Head smaller, frons narrower (.40×.35; frons .078) . . . *laticephala*
  - aa. Bifurecation much shorter.
    - b. Distal half of outer margin of paramera straight. . . . . *titicacae*
    - bb. Distal half of paramera slender and curving inward.
      - c. Basal half of paramera wide, in contrast to slender, curving distal portion (paramera: .05) . . . . . *punensis*
      - cc. Basal portion narrower; paramera long (1.05), tapering gradually from base to tip with a reverse curve . . . . . *myrmeciza*
- AA. Paramera not bifurcated on inner margin.
  - a. Distal portion of paramera straight on outer margin.
    - b. Endomera with a rounded median, and pointed lateral, projections on basal margin.
      - c. Distal portion of paramera very short, with the straight inner margin, terminating at tip of endomera . . . . . *parvigenitalis*

- cc. Distal portion of parameres as long as wide basal portion and with inner margin sharply concave.
  - d. Basal plate shorter (.13); wide basal portion of paramera extending considerably beyond tip of endomera . . . **acutifrons acutifrons**
  - dd. Basal plate longer (.16); wide basal portion of paramera ending at tip of endomera . . . **acutifrons subsimilis**
- bb. Endomera without prolongations on basal margins.
  - c. Basal margin of endomera concave.
    - d. Paramera long, tapering gradually from base to tip (.11).
      - e. Paramera straight on both sides; lateral carinae of basal plate swollen basally and with base concave . . . **lachrymosa**
    - ce. Paramera with distal half slightly concave on inner margin; carinae of basal plate not swollen basally . . . **hirsuta picirostris**
    - dd. Paramera shorter; basal portion wide; distal portion concave on inner margin and tapering abruptly from tip of endomera to short, slender tip . . . **hirsuta hirsuta**
  - cc. Basal margin of endomera strongly convex; wide basal portion of paramera extends far beyond tip of endomera, with slender tip short and concave on inner margin . . . **cephalosa**
- aa. Distal portion of paramera slender and more or less incurved.
  - b. Wide basal portion of paramera twice the length of short, slender curving tip . . . **certhia colombiana**
  - bb. Basal portion of paramera never twice the length of slender curving tip.
    - c. Basal plate much narrower at distal end than at base; wide basal portion of paramera concave on outer margin and extending beyond the tip of endomera . . . **certhia microgenitalia**
    - cc. Basal plate wider at distal end than at base.
      - d. Basal plate expanded at distal end; paramera rather slender basally, and with long, slender, slightly incurving tips longer than the wide basal portion . . . **triangularis**
      - dd. Basal plate not wider at distal end than at base.
        - e. Basal plate equal in length with paramera; sides straight. **longifrons**
        - ee. Basal plate considerably longer than paramera; wide basal portion of paramera about equal in length to slender, curving tips. **certhia certhia**
  - aaa. Paramera more or less straight, but with undulating outer and inner margins which are edged with blackish; endomera large, expanded laterally in median portion . . . **fuliginosa antioquiensis**

### Key to Known Females of *Furnaricola*

(Length of head does not include hyaline tip of frons)

- A. Head at least .05 mm. longer than wide at temples.
  - a. Head .075 mm. or more, longer than wide at temples.
    - b. Lateral spines on VIII long and slender; not more than 1 long and 3 short setae back of spines.
      - c. Pterothorax narrow (.30), with lateral margins but slightly divergent and straight, or almost so (never strongly convex); head with lateral margins straight from temples to frons; anterior plate extending beyond tips of preantennary carinae.
        - d. Head: .466×.36 . . . **acutifrons acutifrons**
        - dd. Head: .435×.35 . . . **parvigenitalis**

- cc. Pterothorax wider (.315 $\times$ .35), with lateral margins strongly convex.
- d. Abdomen more slender (.48 wide); sternal portion of pleurites with a prominent projection on inner side, near anterior end.

**acutifrons chocoana**

- dd. Abdomen wider (.52), oval; pterothorax with lateral margins strongly divergent, convex; pleurites without inner projection (head: .47 $\times$ .39) . . . . . **inexpectata**

- bb. Lateral spines on VIII long, slender and of equal length; more than 3 short setae back of spines, usually 6.

- c. Sides of head slightly convex; preantennary margin concave; preantennary carinae normal, submarginal, but not crenulated; 1 long, 1 medium, and 6 short setae on VIII (head: .47 $\times$ .39) . . **longifrons**

- cc. Sides of head straight from middle of temples to frons; 1 long, 1 medium, and 6 short setae on VIII.

- d. Preantennary carinae wider, marginal, but with inner margin strongly crenulated (head: .456 $\times$ .38) . . . . . **mirandae**

- dd. Preantennary carinae narrow, black, submarginal, and corrugated; 1 long and 6 short setae back of spines on VIII.

**acutifrons subsimilis**

- aa. Head less than .075 mm. longer than wide, but not less than .05 mm. longer

- b. Spines on VIII with anterior one shorter than posterior; pleurites and tergites strongly pigmented.

- c. 1 medium long and 4 short setae back of spines on VIII; sides of head expanded laterally at clavi; lateral margins of temples flatly convex and with distinct, obtuse, posterolateral angles . . . . . **laticephala**

- cc. 1 very long and 4 short setae back of spines; sides of head not appreciably expanded at clavi; temples uniformly circular; frons wide; anterior plate wider than long . . . . . **anabacerthia**

- bb. Spines on VIII equal in length; may be long or short, thick or slender.

- c. Spines on VIII very slender and long.

- d. 1 longish and 6 short setae on VIII, all pointing forward from a narrow, irregular ridge; posterior half of head also more or less quadrilateral; frons narrow . . . . . **hirsuta picirostris**

- dd. 2 long and 6 short setae on VIII; head expanded laterally at antennae; pleurites narrow, black; preantennary carinae with black, irregular inner margins . . . . . **hylactiphaga canae**

- cc. Spines on VIII short and thick . . . . . **quadriceps**

- A4. Head less than 0.5 mm. longer than wide, but more than 0.18 mm.

- a. Size large (body more than 1.80 long); spines on VIII short; 6 medium short setae (body length: 1.90; head, .56 $\times$ .575) . . . . . **lachrymosa**

- aa. Size medium (body 1.60–1.75 long).

- b. Smaller, approximately 1.60 (head: .435 $\times$ .39), spines on VIII very slender; 2 long, 1 medium, and 1 short setae; narrow, black, submarginal preantennary carinae . . . . . **hylactiphaga hylactiphaga**

- bb. Larger, 1.70–1.75.

- c. Frons narrow (head: .51 $\times$ .48), and almost triangular in shape, but slightly expanded laterally at clavi; spines on VIII long and slender; 1 long and 5 short setae back of spines . . . . . **chunchotambo**

- cc. Frons wide, with a very wide hyaline tip; temples broadly rounded; heads of blackish pleurites more or less pointed; spines on VIII short, equal; 1 long and 2 short setae . . . . . **titicacae**

aaa. Size very small, 1.40–1.55 in length.

b. Preantennary margin of head straight, or very faintly concave; spines on VIII long, anterior one shorter; 1 long, 1 medium, and 1 short setae back of spines. . . . . **heterocephala**

bb. Preantennary margin of head convex; spines on VIII short, posterior one the shorter; 1 long and 3 short setae, the latter set along posterior margin of segment . . . . . **myrmeciza**

AAA. Head either wider than long, length and width equal, or else not more than .02 mm. longer than wide.

a. Head equal in length and breadth, or else wider than long.

b. Head with length and width at temples equal; anterior spine on VIII the longer; 4 long and 3 short setae set on a crenulated ridge . . . **triangularis**

bb. Head wider than long; temples expanded laterally (male) . . . **cephalosa**

aa. Head not more than .02 mm. longer than wide at temples.

b. Head triangular in shape, sides straight.

c. Five short setae set on a crenulated ridge on VIII all point forward; 4 short and scattered and 1 longish, point backward . . . **pipraphaga**

cc. Spines on VIII short and equal; 4 short scattered setae and 1 medium long on posterior margin of VIII (head: .50×.48) . . . . **pyriglena**

bb. Head triangular in shape but both preantennary margin and temples are convex, with head considerably larger (.575×.564); spines on VIII long and slender; 4 very short and 1 very long setae, back of spines, all of which point inward . . . . . **tergalis**

### *Furnaricola tergalis*, new species

FIGURES 1, 1a, 2

Holotype female, and allotype male adults, from *Xiphocolaptes a. albicollis* (Vieillot), collected at Serra do Angra, Edo. Rio de Janeiro, Brazil, by Dr. F. L. Werneck (Carriker type no. 786).

Diagnosis: One of the largest of the known species of the genus, with a very large, triangular-shaped head, with rounded temples and very wide frons, and with the hyaline tip unusually wide and circular.

Pleurites narrow and largely black; tergites reduced in width near pleurites and widely separated by hyaline bands. Sternites short (transversely) and also widely separated by hyaline bands. Segment VIII large, but lateral spines very short, and with 1 rather long and 3 very short setae posterior to them.

Male genitalia large; basal plate constricted in median portion, and with basal portion curiously complicated (see fig. 2); paramera rather short, thickened basally, and with short, slender tips, slightly curving; endomera large and of a type common to the genus. Represented by the female holotype, male allotype, and 3 male and 2 female paratypes.

Three females taken on *Xiphocolaptes promeropirhynchus sanctae-martae*, collected in the Sierra Nevada de Santa Marta, Colombia, cannot be separated from the Brazilian females. Perhaps the male genitalia, when known, will be found to differ.

Measurements follow the next species.

*Furnaricola certhia certhia* Carriker, 1963

FIGURES 2a, 3, 4

*Furnaricola certhia certhia* Carriker, 1963, Ann. Mag. Nat. Hist., ser. 13, vol. 5, p. 465, figs. 28-30.

Host: *Dendrocolaptes c. certhia* (Boddaert). (Carriker type no. 701, in British Museum (Natural History); male and female paratypes in Carriker collection.)

One of the larger species, with female much larger than male; the frons wide (.105 in both sexes); preantennary portion of head with margins strongly concave; basal plate wide (.11 at base); endomera short and wide (.06 × .046); paramera rather long (.11), with apical half slender and curving inward, and with outer margins concave medially (see fig. 4).

Specimens from *D. certhia hyleorus* and *D. c. colombianus*, in the author's collection, differ sufficiently from *F. certhia* to merit subspecific rank and are described below.

Measurements of *F. tergalis*, new species, and *F. certhia* Carriker are as follows:

	tergalis ♂		tergalls ♀		certhia ♂		certhia ♀	
	length	width	length	width	length	width	length	width
body	1.50	—	1.79	—	1.59	—	2.00	—
head {	—	.13	—	.15	—	.105	—	.105
	.53	.50	.575	.564	.54	.525	.585	.565
prothorax	.16	.282	.162	.314	.16	.28	.185	.29
pterothorax	.198	.385	.217	.445	.22	.41	.14	.435
abdomen	.76	.54	1.00	.67	.845	.53	1.17	.62
basal plate	.23	.09			.25	.11		
paramera	.115	.09			.11	.09		
endomera	.07	.05			.06	.046		

*Furnaricola certhia colombiana*, new subspecies

FIGURE 5

Holotype, male adult, from *Dendrocolaptes certhia hyleurus* Wetmore, collected by the author at Volador, Dept. Bolívar, Magdalena Valley, Colombia, May 19, 1947 (Carriker type no. 787).

Diagnosis: This race of *certhia* is closely related to the nominate form from British Guiana. The measurements are very close, but the frons is wider (.14 against .105); the prothorax is slightly smaller; the basal plate narrower (.08 against .11); endomera longer and narrower, and the paramera are very differently shaped (see fig. 5), having the wide, basal portion very long and parallel-sided, with the tips very short, slender, and slightly incurved.

Represented by the male holotype and one male paratype.

*Furnaricola certhia microgenitalia*, new subspecies

FIGURES 6, 7

Holotype male and allotype female adults, from *Dendrocolaptes certhia colombianus* Todd, collected by the author at Unguia, Dept. Chocó, Colombia, March 14, 1950 (Carriker type no. 788).

Diagnosis: Very distinct from the nominate race and from *F. certhia colombiana*, new subspecies. Smaller than *certhia*, especially the female (1.74 against 2.00), but males differ less (1.55 against 1.59); head smaller, with narrower frons and preantennary margins straight (concave in *certhia*) (male: head  $.52 \times .51$ , frons .108; female: head  $.54 \times .518$ , frons .11).

It will be noted that in this race there is much less sexual difference in size, especially of the head.

Unfortunately the condition of the types does not permit accurate measurement of the thorax and abdomen, or of figuring the chaetotaxy of segment VIII in the female.

The most striking difference is in the male genitalia, which differs greatly from both *certhia* and *colombiana* (see fig. 7). The basal plate is shorter and much attenuated distally, and the basal portion somewhat different; paramera are slightly longer than in *certhia* and are much longer than in *colombiana*; the general shape is somewhat as in *certhia* but the wide basal portion is much longer and parallel sided, tapering abruptly to the shorter, slender tips.

*Furnaricola lachrymosa*, new species

FIGURES 4a, 8, 9

Holotype female and allotype male adults, from *Xiphorhynchus l. lachrymosus* (Lawrence), collected by the author at Quibdó, Dept. Chocó, Colombia, March 15, 1918 (Carriker type no. 789).

Diagnosis: One of the largest species of the genus presently known, with a very peculiarly shaped head, the posterior half being almost a quadrilateral, thence narrowing rapidly to the frons, and with lateral margins of preantennary portion strongly concave. Pleurites narrow and heavily chitinized, excepting the heads which are almost hyaline; tergites continuous across abdomen, closely fused with pleurites and with posterior margin hyaline; sternites prominent and in median portion of abdomen (see fig. 8).

Paramera straight and tapering. Legs small, with dark marginal carinae along outer side of femora and tibiae. Represented by female holotype, male allotype and male and female paratypes; also one male and one female from another individual of the type host. A single male from *X. lachrymosus alarum* Chapman, collected at Tarazá, Antioquia, is inseparable from the allotype. Measurements follow next species.

*Furnaricola hirsuta hirsuta*, new species

FIGURES 10, 11, 16a, 17a

Holotype female and allotype male adults, from *Xiphorhynchus picus saturator* (Hellmayr),<sup>3</sup> collected by the author at Puerto Venecia, Caquetá, Colombia, May 8, 1952 (Carriker type no. 790).

Diagnosis: A species very different from *lachrymosa*, although the hosts of both belong to the avian genus *Xiphorhynchus* (see footnote).

It is strongly pigmented and with certain cephalic carinae and anterior portion of paratergals black; abdominal sclerites rather distinct, as well as the sternal fringe of short spines and the two long spines on each side of sternite VIII. First and third femora, and third tibiae unusually large and with strong claws. Lateral margins of preantennary portion of head almost straight; frons narrow and anterior plate long and narrow.

Basal plate of male genitalia with wide marginal carinae; paramera with basal two-thirds wide, and thence tapering sharply to the short, straight, and narrow apical portion. Represented by female holotype, male allotype, and one male and five female paratypes. One male and one female from the type host collected at Cúcuta are slightly intermediate between *hirsuta* and the next subspecies but closer to the former.

A male and two females from Rio Viejo (eastern Dept. Bolívar, Magdalena Valley), within the range of *X. p. dugandi*, although differing slightly from specimens of *picrostris* (the following subspecies), must be placed under that race, whose host is *X. p. picrostris*.

Specimens from Pto. Venecio and Coveñas (*hirsuta*) are the smallest of the different populations, are the most deeply pigmented, and also differ in the male genitalia and chaetotaxy of segment VIII of the female.

Figures are given of the male genitalia of *hirsuta* (Pto. Venecia) and of *picrostris* (from El Conejo), also the chaetotaxy of segment VIII of the females of *picrostris* from Rio Vieja (16a) and El Conejo (19a) which, it will be noted, are very similar, while that of *hirsuta* (Pto. Venecia) is very different. Certainly much more material from the different subspecies of *Xiphorhynchus picus* is required in order to satisfactorily classify the forms of *Furnaricola* parasitic on them.

The chaetotaxy of segment VIII in the females and the male genitalia have been largely used in the classification of the species and subspecies of this genus, the characters which appear to be the

<sup>3</sup> I have examined 5 males and 10 females from three supposedly different subspecies of *Xiphorhynchus picus*. All are conspecific but may be roughly divided into two subspecies. In addition to the specimens cited above from *X. p. saturator*, there is a single female from Coveñas (coast of Dept. Bolívar) in the range of *X. p. dugandi* which cannot be separated from them, being small and deeply colored, and must be called *F. h. hirsuta*.

most dependable, but I have not been able to examine a sufficient number of specimens from the same host species to determine to what extent the chaetotaxy may vary.

Nevertheless, the setae present on the head, prothorax, and last abdominal segment of species in other genera of Mallophaga are being used extensively now as identifying characters for species and species groups, so that it seems logical that they may be successfully used in *Furnaricola*.

Until recently *Xiphorhynchus picus* has been placed always under the genus *Dendroplex*, where I believe it should have remained. Both in morphology and habitat, *picus* differs strongly from *Xiphorhynchus* auct. whose species are strictly forest dwellers, while in *Dendroplex picus* we have a species habitually found in semiarid open scrub, composed largely of xerophytic vegetation, and they are often seen out in the open on fenceposts. As further proof we have the very great difference in the type of Mallophagan parasites which infest them.

Measurements of the types of *F. lachrymosa* and *F. h. hirsuta* are as follows:

	lachrymosa ♂		lachrymosa ♀		hirsuta ♂		hirsuta ♀	
	length	width	length	width	length	width	length	width
body	1.63	—	1.91	—	1.33	—	1.40	—
head { frons	—	.108	—	.12	—	.087	—	—
head { temples	.51	.48	.56	.525	.43	.40	.467	.423
prothorax	.155	.28	.174	.303	.115	.24	.132	.26
pterothorax	.228	.38	.22	.412	.14	.347	.195	.365
abdomen	.86	.53	1.08	.608	.65	.435	.75	.48
basal plate	.21	.087			.20	.087		
paramera	.13	.087			.08	.07		
endomera	.07	.045			.05	.041		

*Furnaricola hirsuta picirostris*, new subspecies

FIGURES 12, 19a

Holotype female and allotype male adults, from *Xiphorhynchus picus picirostris* (Lafresnaye), collected by the author at El Conejo, Sierra Perijá, Colombia, March 18, 1945 (Carriker type no. 791).

Diagnosis: Resembles the nominate race in general appearance, but in measurements, some are greater, some are less, and some are the same. It is larger than *hirsuta*, especially the female, with longer and wider head, but with frons the same width; prothorax same in male, larger in female; pterothorax larger in both sexes; abdomen longer and wider in male and much longer in female.

Male genitalia differ in shape and length of paramera, those of *picirostris* being much longer and much narrower basally. Measurements follow next species.

*Furnaricola triangularis*, new species

FIGURES 13, 14, 22a

Holotype female and allotype male adults, from *Lepidocolaptes souleyetii lineaticeps* (Lafresnaye), collected by the author at El Conejo, Sierra Perijá, Colombia, March 18, 1945 (Carriker type no. 792).

Diagnosis: Head practically an equilateral triangle, with narrow frons, rounded temples, and with anterior plate and its supporting carinae extending for half the length of plate beyond the tips of the preantennary carinae.

Pleurites heavily pigmented and with their heads forming a reverse hook; spiracles large and hyaline. Basal plate long and much wider at distal end; both paramera and endomera differ in details. Represented by holotype female, allotype male, and three male and one female paratypes. Three females from *Lepidocolaptes affinis sneiderni*, collected at Urráo, Antioquia, cannot be separated from *triangularis*. When the male from *L. a. sneiderni* is known it may show differences in the genitalia which would separate it from *triangularis*, but for the present it seems best to make no attempt to separate it subspecifically.

Measurements of the types of *F. hirsuta picirostris* and *F. triangularis* are as follows:

	picirostris ♂		picirostris ♀		triangularis ♂		triangularis ♀	
	length	width	length	width	length	width	length	width
body	1.45	—	1.78	—	1.40	—	1.68	—
head {	frons	—	.12	—	.13	—	.098	—
	temples	.49	.445	.50	.48	.445	.415	.456
prothorax	.14	.264	.14	.264	.14	.24	.13	.26
pterothorax	.185	.365	.195	.382	.17	.352	.21	.39
abdomen	.78	.50	1.08	.53	.74	.51	1.13	.564
basal plate	.18	.081			.21	.14		
paramera	.09	.081			.097	.081		
endomera	.063	.041			.067	.037		

*Furnaricola fuliginosa fuliginosa* Carriker, 1963

*Furnaricola fuliginosa* Carriker, 1963, Ann. Mag. Nat. Hist., ser. 13, vol. 5, p. 467, figs. 34-35.

Host: *Dendrocicla f. fuliginosa* (Vieillot). Types in British Museum (Natural History).

In this species the head is similar to that of *certhia*, but very much smaller; the anterior plate extends farther beyond the preantennary carinae and is narrower; thoracic segments same shape as in *guttata* Carriker, but male genitalia smaller and with both basal plate and endomera quite distinct in structure.

It may be noted that the male genitalia in the present species, in *certhia*, and in *guttata* are in proportion to the size of the hosts, that of *certhia*, being the largest and that of *fuliginosa* the smallest.

In the author's collection are 2 males of this species from *D. f. lafresnayeri*, collected in Antioquia, Colombia, which differ so strongly from *fuliginosa* that they must be given subspecific rank, and are described below.

*Furnaricola fuliginosa antioquénsis*, new subspecies

FIGURES 15, 16

Holotype male adult, from *Dendrocincla fuliginosa lafresnayeri* Ridgway, collected by the author at Tarazá, Antioquia, Colombia (Rio Cauca), April 26, 1948 (Carriker type no. 793).

Diagnosis: Very much larger in all measurements than the nominate form. Head also similar in shape to that of *certhia*, but has narrower frons and much wider clavi; preantennary carinae narrower basally and antennae thicker. There are also differences in the structure of the genitalia but the much larger size alone is sufficient for its separation from *fuliginosa*. Represented by the male holotype and one male paratype.

Measurements follow the next species.

*Furnaricola quadraticeps*, new species

FIGURES 17, 23a

Holotype female adult, from *Cichocolaptes leucophrys* (Jardine and Selby),<sup>4</sup> collected by Dr. F. L. Werneck at Serra do Angradas, Edo. Rio de Janeiro, Brazil (Carriker type no. 794).

Diagnosis: Head of a very unusual shape, the portion posterior to the antennary fossae being quite quadrilateral in shape, with slightly rounded templar angles and undulating occipital margin; the preantennary portion of head consists of a perfect truncated cone, with wide, heavily pigmented preantennary carinae.

The thorax and abdomen show no distinctive characters, except the very short spines, with thickened bases, at sides of segment VIII and with only 3 short setae back of them; segment VIII is small in comparison to size of abdomen. Undoubtedly the male, when taken, will show decisive differences in the genitalia. Represented by the female holotype and four female paratypes.

Measurements of male holotypes of *F. f. fuliginosa*, *F. f. antioquénsis*, and female holotype of *F. quadraticeps* are as follows:

<sup>4</sup> For change of name from *Anabates ferruginolentus* Wied to *Cichocolaptes leucophrys* (Jardine and Selby), see Peters, "Birds of the World," 1951, vol. 7, p. 140.

	fuliginosa ♂		antioquensis ♂		quadriceps ♀	
	length	width	length	width	length	width
body	1.41	—	1.69	—	1.71	—
head { frons	—	.087	—	.152	—	.12
head { temples	.445	.423	.58	.564	.51	.456
prothorax	.14	.25	.205	.337	.14	.28
pterothorax	.185	.337	.26	.458	.235	.41
abdomen	.74	.458	.87	.61	.966	.58
basal plate	.173	.064	.306	.105		
paramera	.092	.067	.115	.028		
endomera	.05	.043	.071	.051		

*Furnaricola anabacerthia*, new species

FIGURES 18, 24a

Holotype female adult, from *Anabacerthia striaticollis* Lafresnaye, collected by the author at Virolin, Dept. Santander, Colombia, Sept. 19, 1943 (Carriker type no. 795).

Diagnosis: Also one of the larger species (female,  $1.70 \times .525$ ), but with the head of a different shape. Temples rounded; occipital margin slightly undulating; preantennary margin almost straight; frons wide and anterior plate small, protruding, and wider than long. Pleurites heavily pigmented, ventral portion wider than dorsal; heads large and rounded; anterior margin of tergites incised laterally and with hyaline bands along both sides; sternites as in *lachrymosa*, but wider laterally. Represented by female holotype and one female paratype.

Measurements follow next species.

*Furnaricola longifrons*, new species

FIGURES 19, 20, 25a

Holotype female and allotype male adults, from *Margarornis squamigera perlatus* (Lesson), collected by the author at La Palmita, Santander Norte, Colombia, Aug. 14, 1916. (Carriker type no. 796.)

Head unusually long (female,  $.477 \times .39$ ); temples rounded and with lateral margins converging from middle of temples to the wide frons; preantennary margin slightly concave; anterior plate short, wider than long and with anterior edge convex and posterior concave; preantennary carinae submarginal; abdominal sclerites normal.

Basal plate of male genitalia very short, with length but little more than that of the paramera (see fig. 20); paramera with thickened bases and long, slender, slightly in-curved apical portion; endomera almost parallel sided, with slender tip. Represented by female holotype, male allotype, and two female paratypes.

Measurements of the types of *F. anabacerthia* and *F. longifrons* are as follows:

	anabacerthia ♀		longifrons ♂		longifrons ♀	
	length	width	length	width	length	width
body	1.70	—	1.44	—	1.59	—
head { frons	—	.14	—	.13	—	.13
head { temples	.48	.42	.456	.38	.477	.39
prothorax	.15	.26	.14	.215	.14	.25
pterothorax	.195	.38	.185	.33	.195	.347
abdomen	1.00	.525	.80	.435	.92	.50
basal plate			.123	.077		
paramera			.11	.077		
endomera			.063	.033		

***Furnaricola acutifrons acutifrons* Carriker, 1944**

FIGURES 6a, 32

*Furnaricola acutifrons* Carriker, 1944, Bol. Ent. Venezolana, vol. 3, no. 2, p. 86, pl. 4 (figs. 1, 2), pl. 5 (fig. 1).

Host: *Synallaxis albescens perpallida* Todd.

Head long and slenderly conical, similar to *F. acutifrons chocoana*, new subspecies; anterior plate protruding far beyond tips of preantennary carinae; pleurites with long, pointed heads (not rounded or hooked), black in median portion like *F. punensis*, new species; male genitalia similar to those of *F. a. chocoana*; (female; body,  $1.71 \times .48$ ; head,  $.46 \times .26$ ); three short setae back of spines in VIII.

***Furnaricola acutifrons subsimilis* Carriker, 1944**

FIGURES 18a, 33

*Furnaricola acutifrons subsimilis* Carriker, 1944, Bol. Ent. Venezolana, vol. 3, no. 2, p. 87.

Host: *Leptoxyrura cinnamomea* = *Certhiaxis cinnamomea fuscifrons* (Madaraśz).

Very closely related to *acutifrons*, but head slightly longer and wider; pterothorax shorter and wider; endomera wider in anterior portion and narrower posteriorly; basal plate not constricted near distal end, but parallel sided; spines on VIII long and slender; one long, four short setae; (female; body,  $1.74 \times .48$ ; head,  $.48 \times .38$ ).

***Furnaricola acutifrons chocoana*, new subspecies**

FIGURES 21, 22, 26a

Holotype female and allotype male adults, from *Synallaxis albescens hypoleuca* Ridgway, collected by the author at Unguía, Dept. Chocó, Colombia, March 11, 1950 (Carriker type no. 797).

Diagnosis: A very strikingly shaped head, much longer than wide, and with short, squarish temples (head, female,  $.46 \times .37$ ) and long, tapering preantennary portion; bucal canal narrow and anterior plate small. Dorsal portion of pleurites narrow, blackish medially, while sternal portion is uniformly pigmented, wide, and with a small, rounded protuberance on inner margin, slightly posterior to the head.

Only sternite visible is the genital plate, covering median portion of segments VI and VII; structure and chaetotaxy of VIII distinct (see fig. 26a).

Male genitalia small; basal plate short; paramera with thickened bases and long, incurving tips; endomera of usual shape (see fig. 22).

Represented by the female holotype, the male allotype, and one male paratype.

Measurements follow next species.

*Furnaricola punensis*, new species

FIGURES 11a, 23, 24

Holotype (and only specimen) male adult, from *Synallaxis c. cabanisi* Berlepsch and Leverkühn, collected by the author at Bella Pampa, S. Peru, June 6, 1931 (Carriker type no. 798).

Diagnosis: A small species with rather narrow, conical head, with wide frons, rounded temples and strongly undulating occipital margin. The preantennary carinae are short, blackish, and submarginal; antennae unusually thick and gular sclerite of unusual shape.

First abdominal segment very large, parallel sided, and as wide as pterothorax. Male genitalia strikingly different, almost unique. Paramera with basal portion wide and parallel sided, with slender, curving tips arising from outer portion and with a rather long, slender bifurcation on inner margin (see fig 24); endomera also long, with swollen sides and wide, truncate tip.

The only other species described in the present paper with bifurcated paramera is *myrmeciza*, from an antbird (Formicariidae), but in my first paper on the genus (Bol. Ent. Venezolana, vol. 3, no 2, pp. 83-96) there are three species with bifurcated paramera, two quite similar, with the bifurcation starting near base of paramera (*heterocephala* and *laticephala*), one from a Furnariidae, the other from a Formicariidae. The third species has a short bifurcation similar to the present species and is from a Furnariidae also.

Until much more material is available for study it is impossible to assign this type of genitalia to any particular type of host.

Measurements of *F. acutifrons chocoana* and *F. punensis* are as follows:

	chocoana ♂		chocoana ♀		punensis ♂	
	length	width	length	width	length	width
body	1.45	—	1.78	—	1.39	—
head {frons	—	.076	—	.087	—	.108
head {temples	.40	.326	.46	.37	.391	.35
prothorax	.13	.198	.14	.225	.13	.206
pterothorax	.185	.282	.217	.314	.185	.282
abdomen	.76	.37	1.09	.477	.825	.445
basal plate	.15	.065			.16	.044
paramera	.077	.066			.05	.03
endomera	.04	.09			.04	.026

*Furnaricola myrmeciza*, new species

FIGURES 12a, 25, 26

Holotype female and allotype male adults, from *Myrmeciza i. immaculata* (Lafresnaye), collected by the author at Hcda. Santana, Santander, Colombia, Oct. 10, 1949 (Carriker type no. 799).

Diagnosis: May be recognized by the shape of the head, the entire lateral margins from base of temples to frons uniformly convex (see fig. 25), and with the hyaline band around frons wide. Heads of pleurites slender, pointed, and curved inward. The holotype has three long spines on right side of segment VIII and the usual two on left side. Have seen one other case of three spines on right side of VIII.

Male genitalia very characteristic, there being presently no other known species quite like it. The basal plate is small, expanded at anterior end; paramera nearly as long as basal plate, slender, tapering, with a reverse curve, and with a slender bifurcation at sides of endomera; endomera typical.

Represented by the female holotype, male allotype and one male and one female paratypes, and by a single female from *Myrmeciza laemosticta pallida*, collected at Hcda. Belen, Antióquia, which cannot be separated from the female holotype. Measurements follow next species.

*Furnaricola pyriglena*, new species

FIGURES 13a, 27

Holotype female adult, from *Pyriglena leuconota picea* Cabanis, collected by the author at Eneñas, Chanchamayo, Peru, March 4, 1930 (Carriker type no. 800).

Diagnosis: A rather large species with a conical-shaped head, narrow frons and rounded temples. There are no outstanding characters for this species, excepting shape of head, anterior and gular plates and shape of segment VIII of abdomen. Legs small, especially the coxae and second leg; median portion of pleurites black.

Measurements of the types of *F. myrmeciza* and *F. pyriglena* are as follows:

	myrmeciza ♂		myrmeciza ♀		pyriglena ♀	
	length	width	length	width	length	width
body	1.41	—	1.54	—	1.78	—
head {	—	.11	—	.10	—	1.08
	.434	.358	.43	.385	.50	.48
prothorax	.12	.235	.13	.24	.155	.27
pterothorax	.19	.303	.205	.337	.175	.37
abdomen	.673	.458	.91	.49	1.06	.54
basal plate	.14	.04				
paramera	.105	.073				
endomera	.06	.036				

*Furnaricola pipraphaga*, new species

FIGURES 15a, 28

Holotype female adult, from *Pipra pipra comata* Berlepsch and Stolzman, collected by the author at Eneñas, Chanchamayo, Peru, March 12, 1930 (Carriker type no. 801).

Diagnosis: Head decidedly triangular, somewhat similar to that of *F. triangularis*, but the mandibles are quite different, as well as the preantennary carinae, clavi and gular plate (see fig. 28). Head also resembles that of *pyriglena* in shape, but the abdominal sclerites are very different, the tergites in *pyriglena* almost filling the segments and with prominent sternites in III–VII, while in the present species the pleurites are without heads and tergites widely separated by hyaline bands, and the sternites, if present, are entirely invisible, excepting the genital sternite covering portions of VII and VIII.

One long and five short setae behind the short, slender lateral spines. Male unknown. Represented by the holotype female only.

Measurements follow next species.

*Furnaricola inexpectata*, new species

FIGURES 14a, 29

Holotype female adult, from *Pipra caeruleicapilla* Tschudi, collected by the author at La Pampa, southeast Peru, July 8, 1931 (Carriker type no. 802).

Diagnosis: Head very differently shaped from that of *F. pipraphaga* described above, being somewhat similar to that of *F. acuticeps chocoana*, but with more rounded temples and much wider frons and with wide, heavily pigmented preantennary carinae having corrugated inner margins. The gular plate very similar to that of *pipraphaga*, but pterothorax longer and wider and with third pair of legs much smaller. Also lacks the sternites as in *pipraphaga*; long spines on VIII similar, but only three very short setae back of them.

Measurements of the types of *F. pipraphaga* and *F. inexpectata* are as follows:

	pipraphaga ♀		inexpectata ♀	
	length	width	length	width
body	1.68	—	1.56	—
head { frons	—	.108	—	.108
head { temples	.467	.458	.467	.391
prothorax	.14	.25	.13	.24
pterothorax	.18	.35	.174	.347
abdomen	1.00	.61	.89	.52

Note: There is a faint possibility of straggling in the case of this and the preceding species, although no real proof. The genus *Furnaricola* is, on the whole, quite sedentary in its habits, clinging tightly to the feathers of the dead bird, and not moving about as do many other genera. The only thing that is suspicious

is the fact that the two females are so very different, while both are from hosts of the same genus. Further checks are being made to find out what species of birds were actually collected on the two days corresponding to the dates of the taking of the two specimens under discussion.

*Furnaricola hylactiphaga hylactiphaga*, new subspecies

FIGURES 20a, 30

Holotype female adult, from *Scytalopus magellanicus affinis* Zimmer, collected by the author at Yanac, Huascarán, Peru, March 22, 1932 (Carriker type no. 803).

Diagnosis: Head slenderly conical, with the short, broken, pre-antennary carinae black; gular plate small and without appendages; thoracic segments normal; abdomen elongated oval, with deeply pigmented, narrow pleurites; tergites heavily pigmented in outer portion and pale in median portion.

Tergites separated medially, with rounded ends. The only known host on which have been taken *Furnaricola* with this type of tergites is *Scytalopus*.

Six rather longish setae behind the short, lateral spines on VIII. Male unknown. Represented by the female holotype and one female paratype.

It will be most interesting to see what type of genitalia is present in the species from *Scytalopus*, and also in those from the Pipridae. Measurements follow next species.

*Furnaricola hylactiphaga canae*, new subspecies

FIGURES 21a, 31

Holotype female adult, from *Scytalopus magellanicus canus* Chapman, collected by the author at Heda. Potreros, near Frontino, Antióquia, Colombia, June 7, 1950 (Carriker type no. 804).

Diagnosis: As in the nominate race, the tergites are divided medially; the pleurites are narrow dorsally and partly black, with wider, paler sternal portion; head with preantennary margin slightly concave and with temples more expanded. Anterior plate rather long, and divided as in the nominate race (see fig. 31). Sternal spines on VIII short, with 1 long and 5 very short setae behind them. Male unknown. Represented by the holotype female and one female paratype.

Measurements of *F. h. hylactiphaga* and *F. hylactiphaga canae* are as follows:

	hylactiphaga ♀		canae ♀	
	length	width	length	width
body	1.60	—	1.41	—
head {	frons	—	—	.105
	temples	.435	.415	.358
prothorax	.108	.228	.12	.206
pterothorax	.19	.43	.16	.293
abdomen	.955	.51	.80	.415

*Furnaricola parvigenitalis* Carriker, 1944

## FIGURE 8a

*Furnaricola parvigenitalis* Carriker, 1944, Bol. Ent. Venezolana, vol. 3, no. 2, p. 88, pls. 4 (figs 3, 4), 5 (fig. 2).

Host: *Synallaxis erythrogaster* Slater.

Head similar to that of *punensis*, new species, but narrower at temples and with the preantennary carinae continuous to tip of frons; frons narrow, with anterior plate protruding almost entirely beyond tips of preantennary carinae; bucal canal much narrower than in *punensis*; male genitalia very different (see key); (female: body,  $1.59 \times .45$ ; head,  $.435 \times .35$ ).

*Furnaricola laticephala* Carriker, 1944

## FIGURE 27a

*Furnaricola laticephala* Carriker, 1944, Bol. Ent. Venezolana, vol. 3, no. 2, p. 89, pls. 4 (figs. 5, 6), 5 (fig. 3).

Host: *Cranioleuca subcristata* (Slater).

Head unlike any species here figured. Sides of temples nearly straight, with blunt posterolateral angles (not rounded); head nearly as wide at clavi as at temples, converging rapidly from clavi to frons, with sides concave. Pleurites wider and paler ventrally than dorsally; tergites pale but sternites heavily pigmented. Male genitalia with paramera bifurcated; paramera straight, with short, slender tips; (female: body,  $1.73 \times .586$ ; head,  $.445 \times .41$ ).

*Furnaricola titicacae* Carriker, 1944

## FIGURE 10a

*Furnaricola titicacae* Carriker, 1944, Bol. Ent. Venezolana, vol. 3, no. 2, p. 91, pls. 4 (figs. 7, 8), 5 (fig. 4).

Host: *Phleocryptes melanops schoenbaenus* Cabanis and Heine.

One of the larger species and somewhat aberrant in structure of preantennary portion of head; frons very wide (.135) and completely encircled by a wide hyaline band. It is also one of the species in which the male has bifurcated paramera (see keys); (female: body,  $1.73 \times .59$ ; head,  $.445 \times .41$ ).

*Furnaricola chunchotambo* Carriker, 1944

## FIGURE 3a

*Furnaricola chunchotambo* Carriker, 1944, Bol. Ent. Venezolana, vol. 3, no. 2, p. 92, pl. 6 (fig. 1).

Host: *Xiphorhynchus chunchotambo* = *X. ocellatus chunchotambo* (Tschudi).

Head triangular in shape, wide at rounded temples, with lateral margins expanded slightly at clavi; frons narrow; anterior plate half

the length of bucal canal and does not extend beyond tips of pre-antennary carinae; bucal canal expanded laterally in median portion; gular plate with pointed, lateral sclerites at base; tergites very pale and sternites invisible. Male unknown; (female: body,  $1.74 \times .52$ ; head,  $.54 \times .477$ ).

***Furnaricola cephalosa* Carriker, 1944**

*Furnaricola cephalosa* Carriker, 1944, Bol. Ent. Venezolana, vol. 3, no. 2, p. 94, pl. 6 (figs. 2, 3).

Host: *Glyphorhynchus spirurus pectoralis* = *G. s. sublestes* Peters. Female unknown.

Head very wide at temples, wider than abdomen, semitriangular in shape. Sides of head much expanded laterally at clavi; bucal canal very short; anterior plate wider than long, short, and not protruding. Pleurites wider ventrally, dark brown; tergites very pale; sternites prominent and dark brown; (male: body,  $1.18 \times .41$ ; head,  $.39 \times .43$ ). For genitalia, see key.

***Furnaricola heterocephala* Carriker, 1944**

*Furnaricola heterocephala* Carriker, 1944, Bol. Ent. Venezolana, vol. 3, no. 2, p. 95, pl. 4 (figs. 4-6).

Host: *Gymnocichla c. chiroleuca* = *G. nudiceps chiroleuca* Sclater and Salvin.

Female: body,  $1.45 \times .50$ ; head,  $.45 \times .40$ .

Shape of head much as in *anabacerthia*, new species, but prothorax narrower; segment I of abdomen narrower; pleurites parallel sided (not swollen at heads as in *anabacerthia*); two long and two short setae back of spines on VIII.

Basal plate very short, with rounded distal end wider than at base; paramera bifurcated as in *parvigenitalis*, but paramera thicker basally and with tips more slender; endomera more or less as in *myrmeciza*, new species.

Tergites and sternites about equal in color, light brown; sternites narrower than tergites, are separated by wide hyaline bands, and are darker along posterior margin.

***Furnaricola guttata* Carriker, 1963**

*Furnaricola guttata* Carriker, 1963, Ann. Mag. Nat. Hist., ser. 13, vol. 5, p. 466, figs. 31-33.

Host: *Xiphorhynchus guttatus polystictus* (Salvin and Godman) (Carriker type no. 702); types in British Museum (Natural History).

Superficially resembles *certhia* Carriker, but head narrower at both frons and temples; prothorax parallel sided as in *chunchotambo* Carriker; the peculiar clear sternal sclerites of the thorax are unusual. Male genitalia same type as that of *certhia* but smaller, especially

the basal plate, and paramera differ in shape; (female: body,  $174 \times .565$ ; head,  $.51 \times .468$ ).

*Furnaricola mirandae* Carriker, 1963

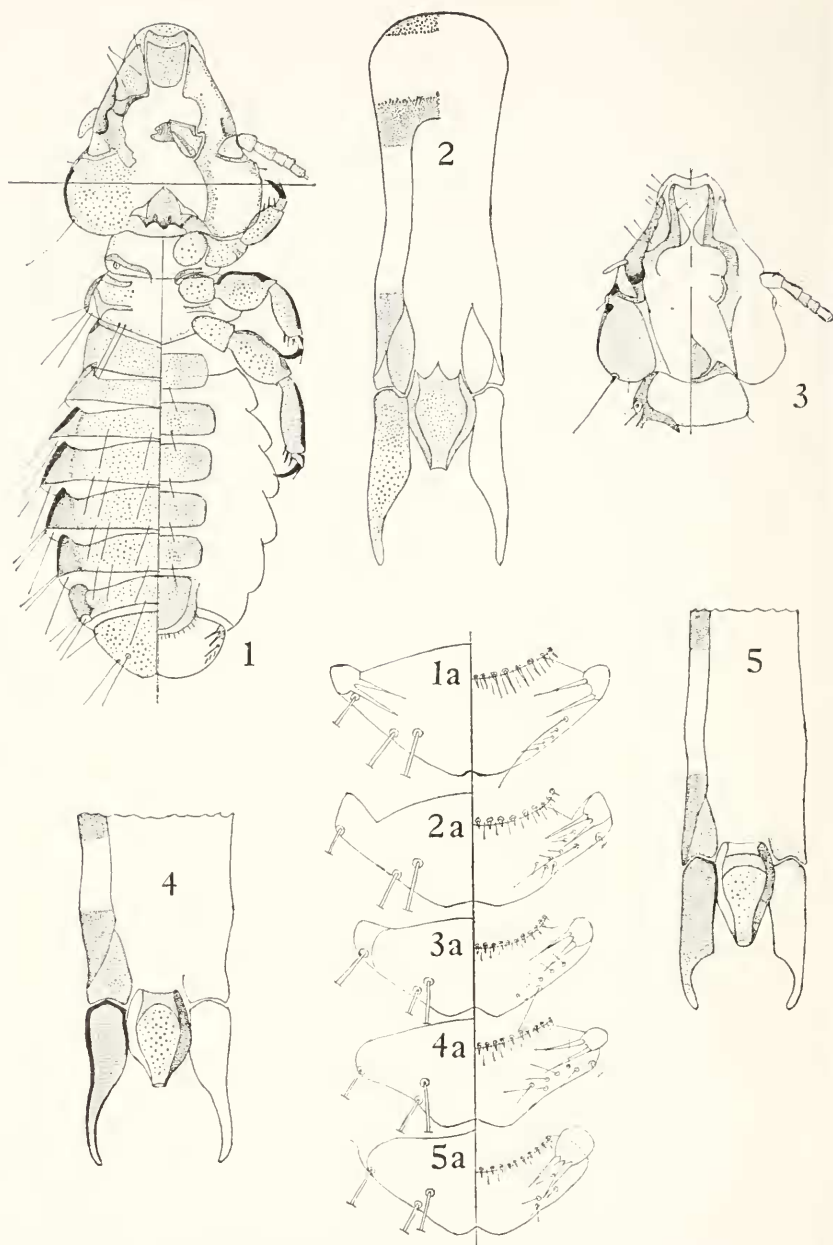
FIGURE 5a

*Furnaricola mirandae* Carriker, 1963, Mem. Soc. Cien. Nat. La Salle, Caracas, Venezuela, vol. 23, p. 30, pl. 10 (fig. 2).

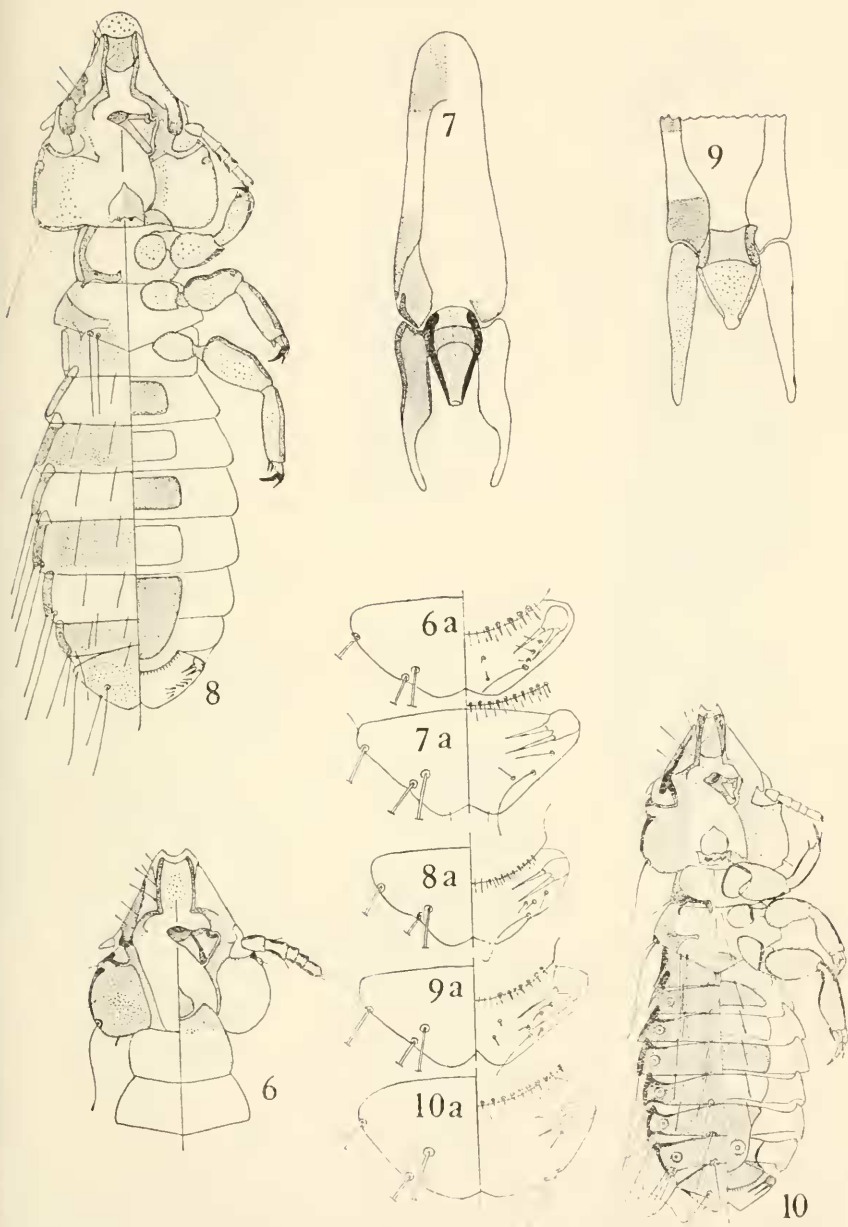
Host: *Synallaxis unirufa castanea* Sc Slater (Carriker type no. 680).

Most closely related to *F. acutifrons* Carriker, differing in wider frons and anterior plate, the latter not extending beyond tips of pre-antennary carinae; a hyaline band, concave medially, around frons; pterothorax with lateral margins convex and strongly divergent (very slightly in *acutifrons*); ventral portion of pleurites wider and more deeply colored than dorsal.

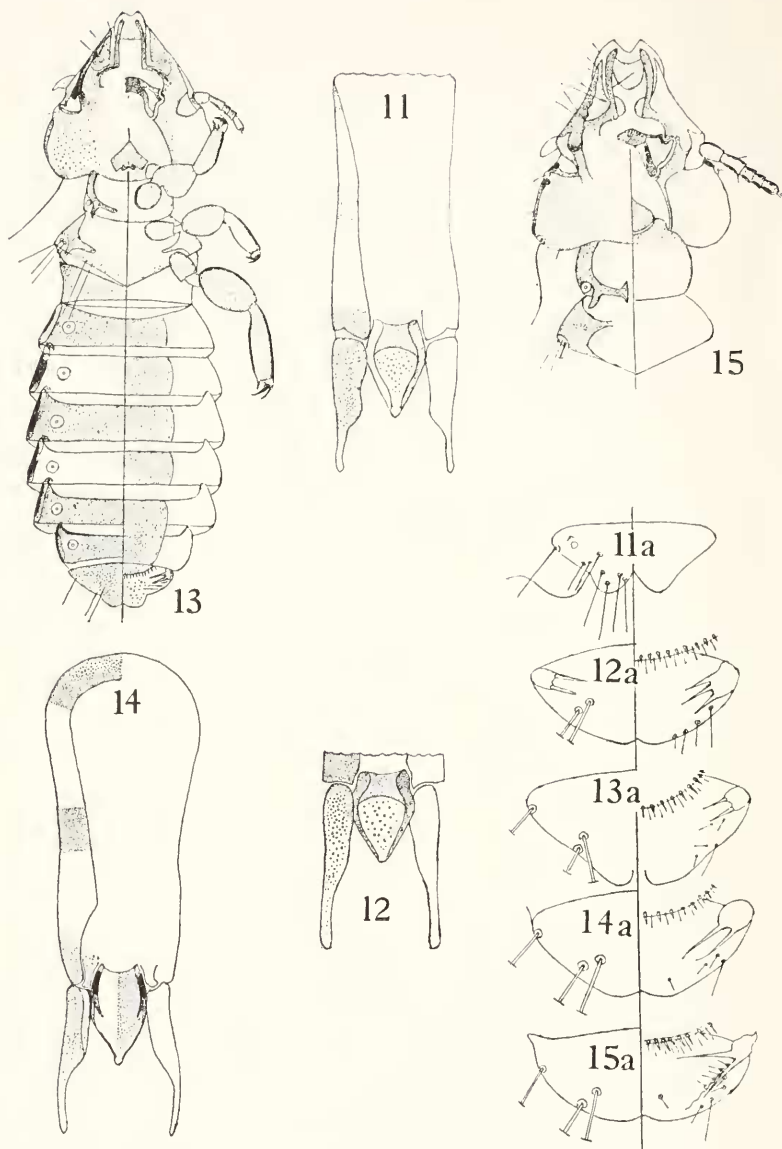
Body much shorter than in *acutifrons*, but head nearly the same size. Known from a single female, the holotype (body,  $1.50 \times .46$ ; head,  $.456 \times .38$ ). (See figure 5a for spines and setae on segment VIII.)



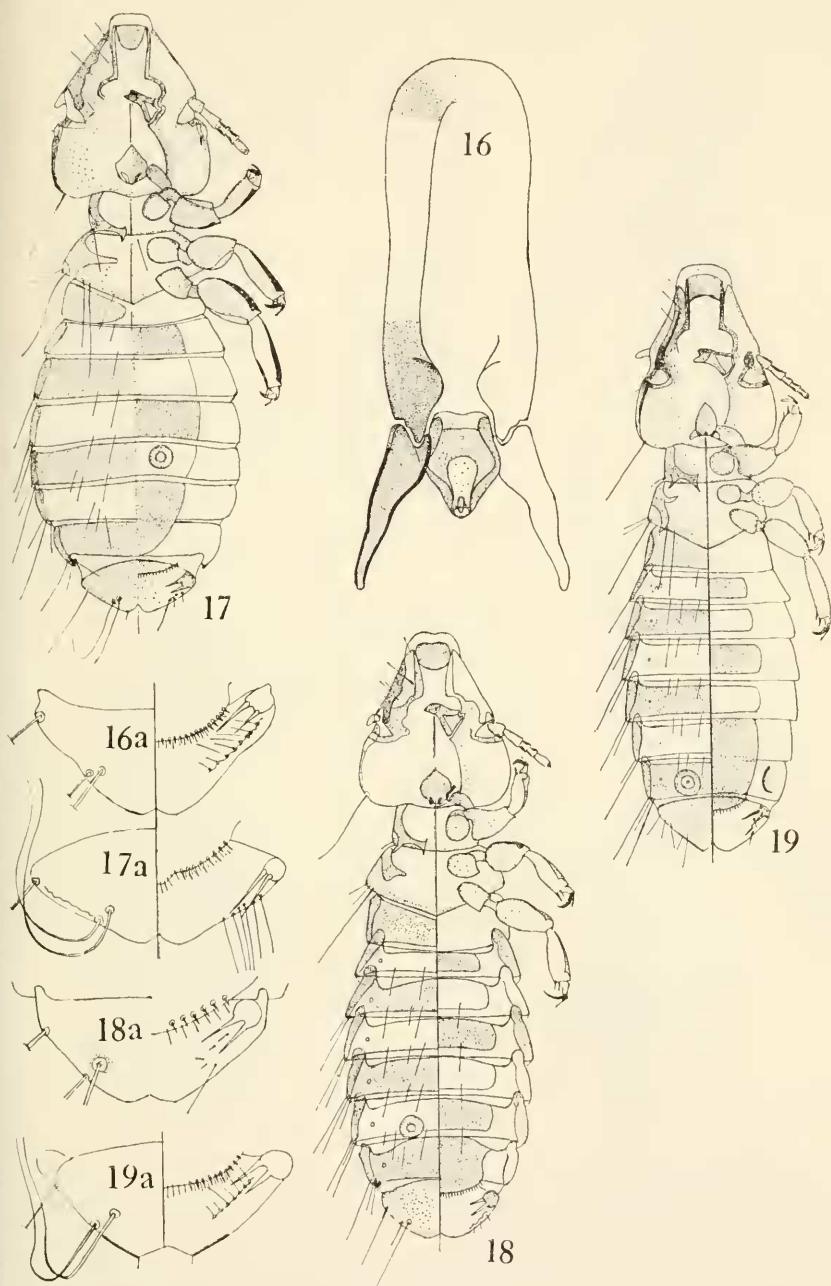
FIGURES 1-5.—*Furnaricola tergalis*, new species: 1, body of male; 2, male genitalia. *F. certhia certhia* Carriker: 3, head and prothorax of male; 4, male genitalia. *F. certhia colombiana*, new subspecies: 5, male genitalia. FIGURES 1a-5a.—Chaetotaxy of segment VIII of females (bird hosts in parens): 1a, *F. tergalis*, new species (*Xiphocolaptes a. albicollis*); 2a, *F. certhia* Carriker (*Dendrocolaptes c. certhia*); 3a, *F. chunchotambo* Carriker (*Xiphorhynchus ocellatus chunchotambo*); 4a, *F. lachrymosa*, new species (*X. l. lachrymosus*); 5a, *F. mirandae* Carriker (*Synallaxis unirufa castanea*).



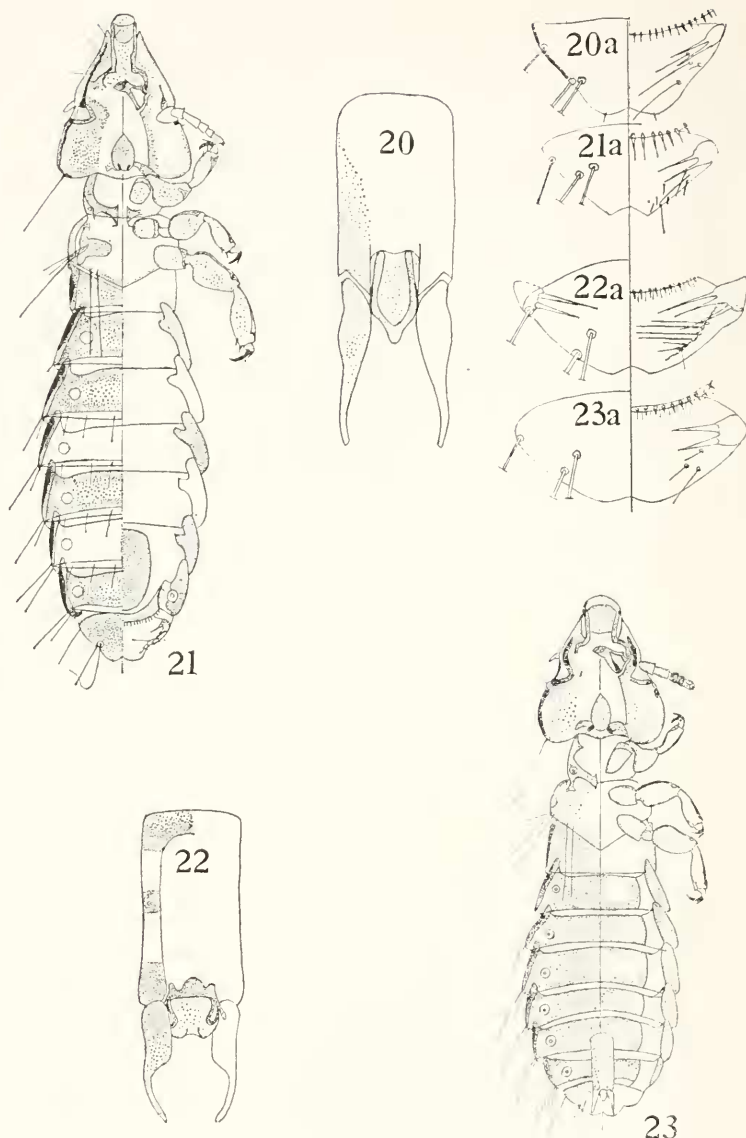
FIGURES 6-10.—*Furnaricola certhia microgenitalia*, new subspecies: 6, head and thorax of male; 7, male genitalia. *F. lachrymosa*, new species: 8, body of female; 9, male genitalia. *F. hirsuta hirsuta*, new species: 10, body of female. FIGURES 6a-10a.—Chaetotaxy of segment VIII of females (bird hosts in parens): 6a, *F. a. acutifrons* Carriker (*Synallaxis albescentis perpallida*); 7a, *F. heterocephala* Carriker (*Gymnocichla nudiceps chiroleuca*); 8a, *F. parvigenitalis* Carriker (*Synallaxis erythrogaster*); 9a, *F. acutifrons subsimilis* Carriker (*Synallaxis cinnamomeus fuscifrons*); 10a, *F. titicacae* Carriker (*Phloeocryptes melanops schoenbaenus*).



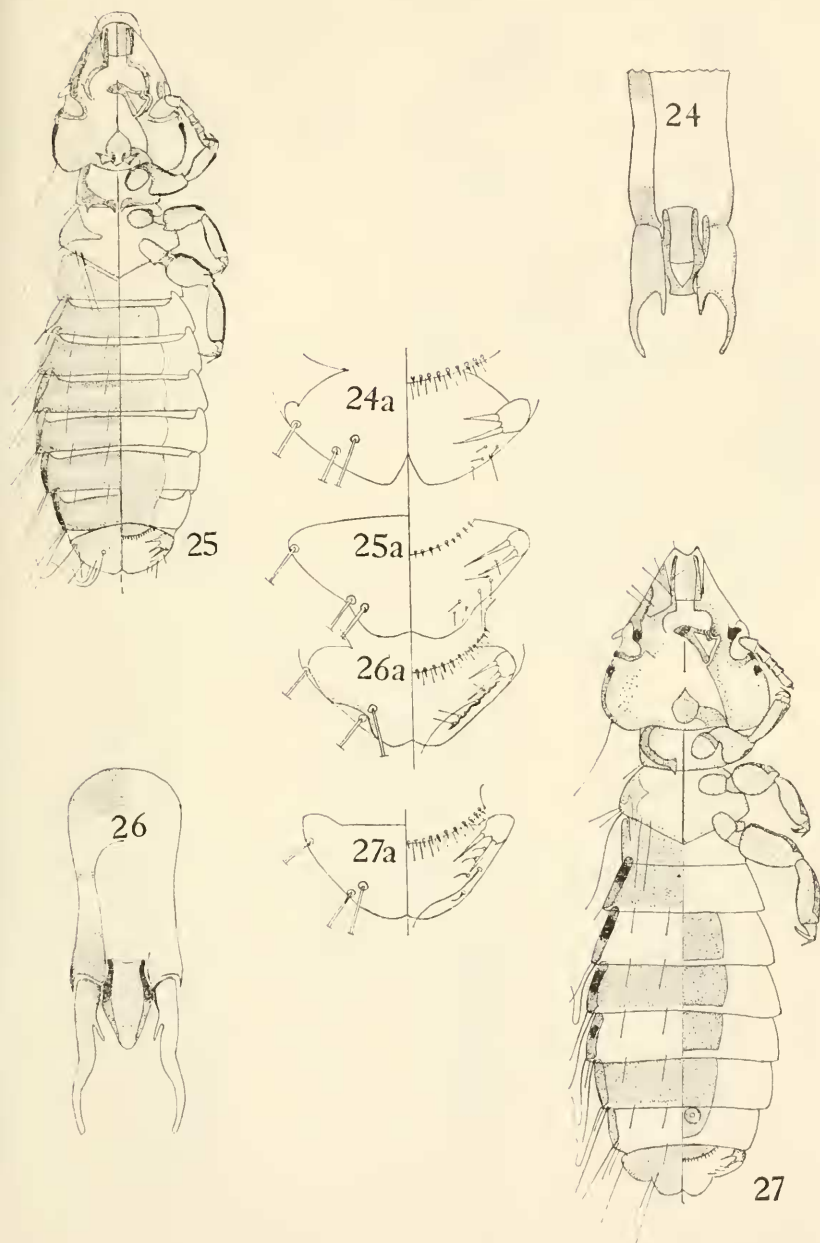
FIGURES 11-15.—*Furnaricola hirsuta hirsuta*, new species: 11, male genitalia. *F. h. picirostris*, new species: 12, male genitalia. *F. triangularis*, new species: 13, body of female; 14, male genitalia. *F. fuliginosa antioquiensis*, new subspecies: 15, head and thorax of male. FIGURES 11a-15a.—Chaetotaxy of segment VIII of females (bird hosts in parens): 11a, *F. punensis*, new species (male) (*Synallaxis cabanisi*); 12a, *F. myrmeciza*, new species (*Myrmeciza immaculata*); 13a, *F. pyriglena*, new species (*Pyriglena picea*); 14a, *F. inexpectata*, new species (*Pipra caeruleicapilla*); 15a, *F. pipraphaga*, new species (*Pipra pipra comata*).



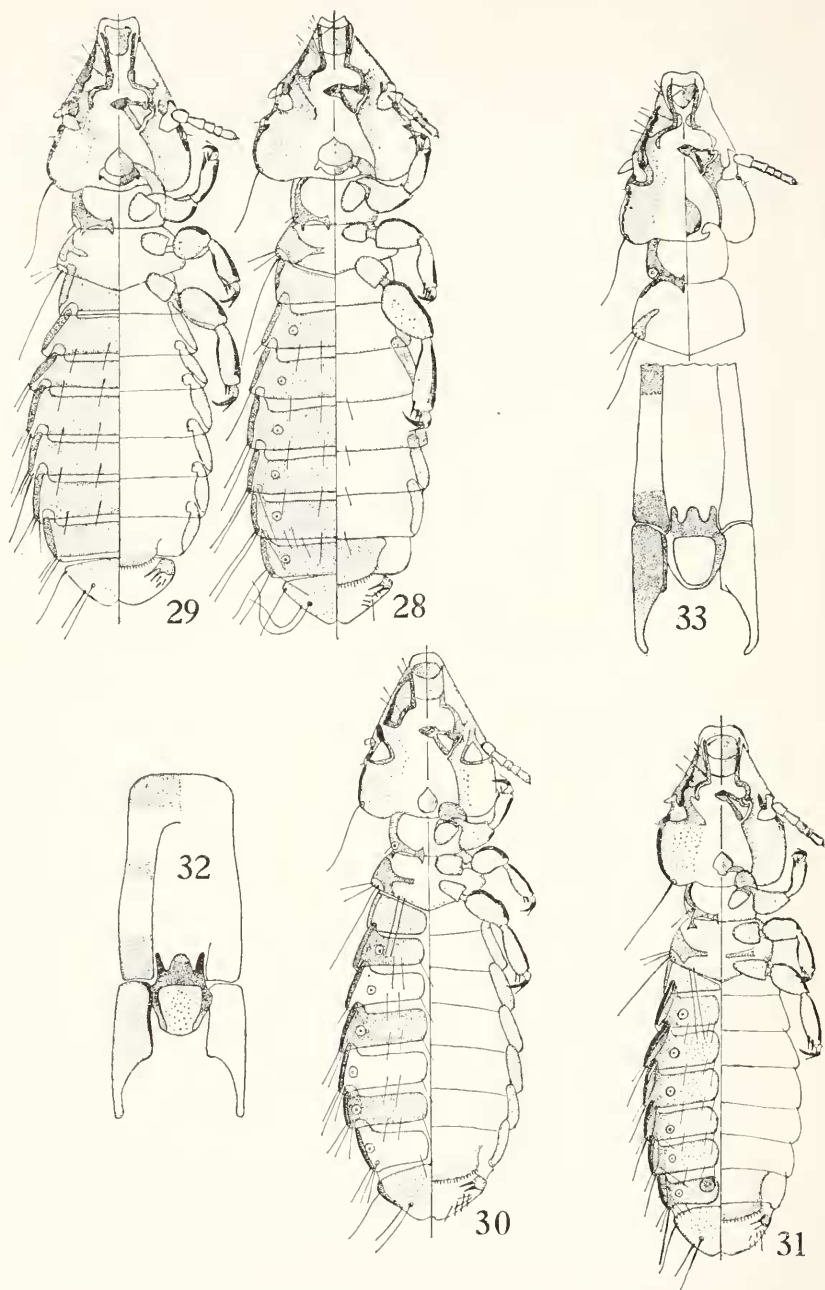
FIGURES 16-19.—*Furnaricola fuliginosa antioquiensis*, new subspecies: 16, male genitalia. *F. quadracapitis*, new species: 17, body of female. *F. anabacerthia*, new species: 18, body of female. *F. longifrons*, new species: 19, body of female. FIGURES 16a-19a.—Chaetotaxy of segment VIII of females (bird hosts in parens): 16a, *F. h. hirsuta*, new subspecies (*Xiphorhynchus picus dugandi*); 17a, *F. h. hirsuta* (*X. p. saturator*, type host); 18a, *F. acutifrons subsimilis* Carriker (*Certhiaxis cinnamomea fuscifrons*); 19a, *F. hirsuta picirostris*, new subspecies (*Xiphorhynchus picus picirostris*).



FIGURES 20-23.—*Furnaricola longifrons*, new species: 20, male genitalia. *F. acutifrons chocoana*, new subspecies: 21, body of female; 22, male genitalia. *F. punensis*, new species: 23, body of male. FIGURES 20a-23a.—Chaetotaxy of segment VIII of females (bird hosts in parens): 20a, *F. h. hylactiphaga*, new species (*Scytalopus magellanicus affinis*); 21a, *F. h. canae*, new subspecies (*Scytalopus magellanicus canus*); 22a, *F. triangularis*, new species (*Lepidocolaptes souleyetii lineaticeps*); 23a, *F. quadraticeps*, new species (*Cichocolaptes leucophrys*).



FIGURES 24-27.—*Furnaricola punensis*, new species: 24, male genitalia. *F. myrmeciza*, new species: 25, body of female; 26, male genitalia. *F. pyriglena*, new species: 27, body of female. FIGURES 24a-27a.—Chaetotaxy of segment VIII of females (host birds in parens): 24a, *F. anabacerthia*, new species (*Anabacerthia striaticollis*); 25a, *F. longifrons*, new species (*Margarornis squamigera perlatus*); 26a, *F. acutifrons chocoana*, new subspecies (*Synallaxis albens hypoleuca*); 27a, *F. laticephala* Carriker (*Cranioleuca subcristata*).



FIGURES 28-33.—*Furnaricola pipraphaga*, new species: 28, body of female. *F. inexpectata*, new species: 29, body of female. *F. h. hylactiphaga*, new subspecies: 30, body of female. *F. h. canae*, new subspecies: 31, body of female. *F. a. acutifrons* Carriker: 32, male genitalia, from type. *F. a. subsimilis* Carriker: 33, head and thorax of female, male genitalia.